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1984

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Union College - Lincoln

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HISTORY OF SCIENCE

FOSSIL PROBOSCIDIANS AND MYTHS OF GIANT MEN

James L. Hayward

Division of Science and Mathematics
Union College
Lincoln, Nebraska 68506

The early history of paleontology is replete with examples of misidentifications of fossils. Teeth and bones of mastodons and mammoths were especially apt to be identified as the remains of antediluvian giants. These fallacies were entertained not only by the uninformed, but also by the intellectual elite. Even today misidentified fossils are sometimes used as "evidence" for the former existence of giants.

† † †

Nebraska is famous for its fossils. Today research and education assure that even preschoolers understand the nature of these relics of past life. But such enlightenment has not always prevailed. Sixteenth and seventeenth century divines variously considered fossils to be formed by "plastic forces" in the rocks, inventions of the Devil designed to deceive and terrify the faithful, "irradiations" from stars and planets, "sports" or "jokes" of nature, and sacred portents of future events. Some even supposed that fossils were the discarded remains of organisms from an early but unsuccessful creation attempt by God (Adams, 1960:250-254).

Misconceptions were not unique to the simple-minded or the superstitious, however. Voltaire (F. M. Arouet, 1694-1778), noted not only for his scorn of religion, but also for his skepticism towards science, developed a colorful hypothesis to explain the origin of marine fossils found among the highland areas of Europe. Fearing these discoveries would be used to support the biblical story of Noah's flood, "all his wisdom and wit were compacted into arguments to prove that the fossil fishes were remains of fishes intended for food, but spoiled and thrown away by travellers; that the fossil shells were accidentally dropped by crusaders and pilgrims returning from the Holy Land; and that the fossil bones found between Paris and Étampes were parts of a skeleton belonging to the cabinet of some ancient philosopher" (White, 1960:229).

Despite Voltaire's assertions, the belief that fossils were the remains of once-living creatures finally became respectable during the seventeenth and eighteenth centuries (Adams, 1960:262; Page, 1969). But while the origin of fossils became better appreciated, misidentifications were not uncommon, for few people at the time had even a rudimentary understanding of comparative morphology (Dunbar and Waage, 1969:60).

One of the most remarkable misidentifications of fossils was by physician Johann Jacob Scheuchzer (1672-1733). In 1726 the eminent Swiss doctor published a small Latin volume entitled *Homo diluvii testis* ("the man who witnessed the flood"). The twenty-four-page treatise contained descriptions and illustrations of articulated fossil skeletons found in the Miocene lakebeds near Oeningen, Switzerland (Fig. 1). Although it took considerable imagination to envision humanlike characteristics in these bones, Scheuchzer was convinced that they were indeed the remains of antediluvian man.

Homo diluvii testis remained in the literature as an "established" example of pre-flood man until 1787. In that year anatomist Petrus Camper restudied Scheuchzer's fossils and detected the physician's error. While Camper himself misjudged the remains as those from a large lizard, vertebrate paleontologist Georges Cuvier correctly identified them in 1811 as bones from an extinct giant salamander. Wrote Cuvier, "Nothing less than total blindness on the scientific level can explain how a man of Scheuchzer's rank, a man who was a physician and must have seen human skeletons, could embrace such a gross self-deception. For this fragment, which he propagated so sententiously, and which has been sustained for so long on the prestige of his word, cannot withstand the most cursory examination" (Jahn, 1969).

GIANTS IN THE EARTH

Unlike Scheuchzer's fallacy, however, many misidentifications of fossils were made from the remains of mammoths and mastodons, large and apparently once common Pleistocene proboscideans. Bones and teeth of these animals have been discovered throughout northern regions of the world and are indeed impressive finds (Figs. 2 and 3). The 1824 self-portrait of Charles Willson Peale (1741–1827) decorating a wall at the New-York Historical Society (Fig. 4) testifies to the interest invested in these fossils in centuries past.

Mammoth and mastodon fossils were sometimes identified as the remains of prehistoric monsters and other fanciful creatures. In 1663, for example, Otto von G ricke, burgomaster of Megdeburg, Germany, made the first-known reconstruction of such bones, shaping them into the form of a two-legged "unicorn" (Fig. 5). The single horn of his ingenious assemblage was in reality a mammoth tusk (Dunbar and Waage, 1969:60).

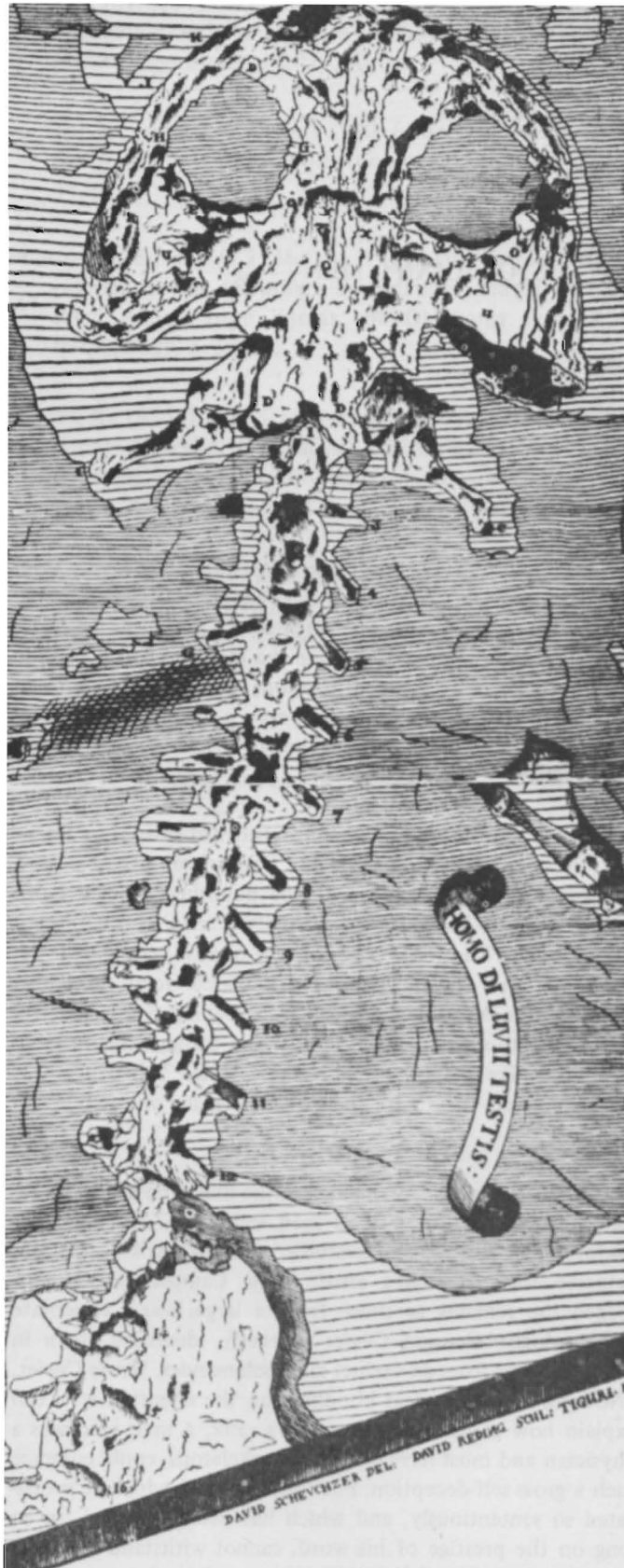


FIGURE 2. C. Bertrand Schultz (left) and Lloyd G. Tanner (right) view a mounted skeleton of *Stegomastodon* sp., a Pleistocene mastodon. (Courtesy of the University of Nebraska State Museum and with the permission of C. B. Schultz and L. G. Tanner.)

FIGURE 1. *Homo diluvii testis* from Johann Jacob Scheuchzer's booklet by the same name. [From Jahn (1969) and reprinted with the permission of The Massachusetts Institute of Technology Press.]

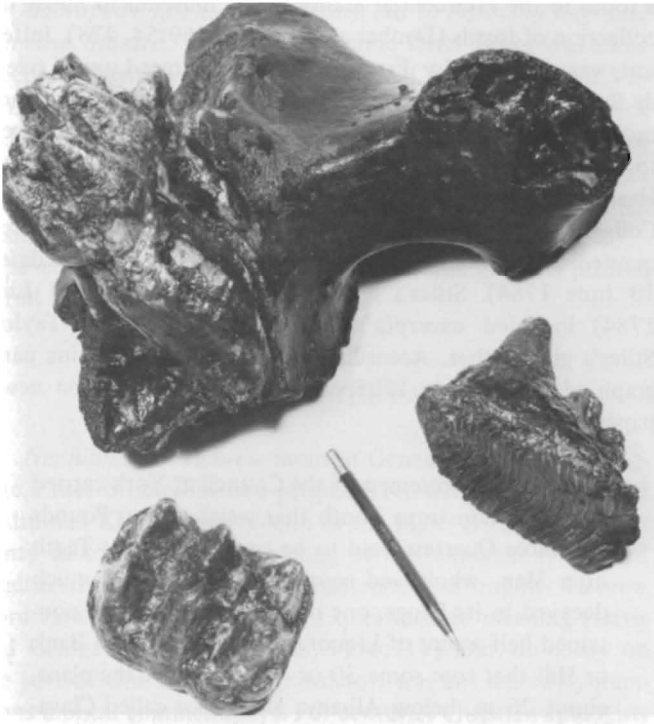


FIGURE 3. Mastodon tooth and jaw fragment (top), mastodon tooth (lower left), and mammoth tooth (lower right). (Courtesy of the University of Nebraska State Museum.)

As late as 1838, Albert Koch assembled a mastodon skeleton, found in Missouri, into a creature he called the “Missourian.” The bones were exhibited in both America and London, and according to a 31 December 1841 article in the *London Times*, the one-time animal was probably “aquatic in nature.” James Pedder, editor of *The Farmer’s Cabinet and American Herd Book*, had seen the bones displayed and concluded that the views circulating about “Missourian” were erroneous. He drew up a sketch and detailed description of how he imagined the beast to look (Fig. 6). “The animal was a Monster of the Tortoise Tribe,” wrote the confident Pedder, “32 feet long and correspondent width with the power of withdrawing its head within its shell; the tusks then forming a mail of defense around its edge to ward off obstruction.” British anatomist Richard Owen later examined the skeleton and identified it as a mastodon. Ultimately the specimen was acquired by the British Museum where it was properly reassembled and displayed (Simpson, 1936; Merrill, 1964:213–215).

Of greater interest, and perhaps more common, were mammoth or mastodon bones and teeth thought to be of giant human origin. Myths of ancient races of giants have flourished in many cultures, despite a complete lack of supporting archaeological or paleoanthropological evidence. For example,

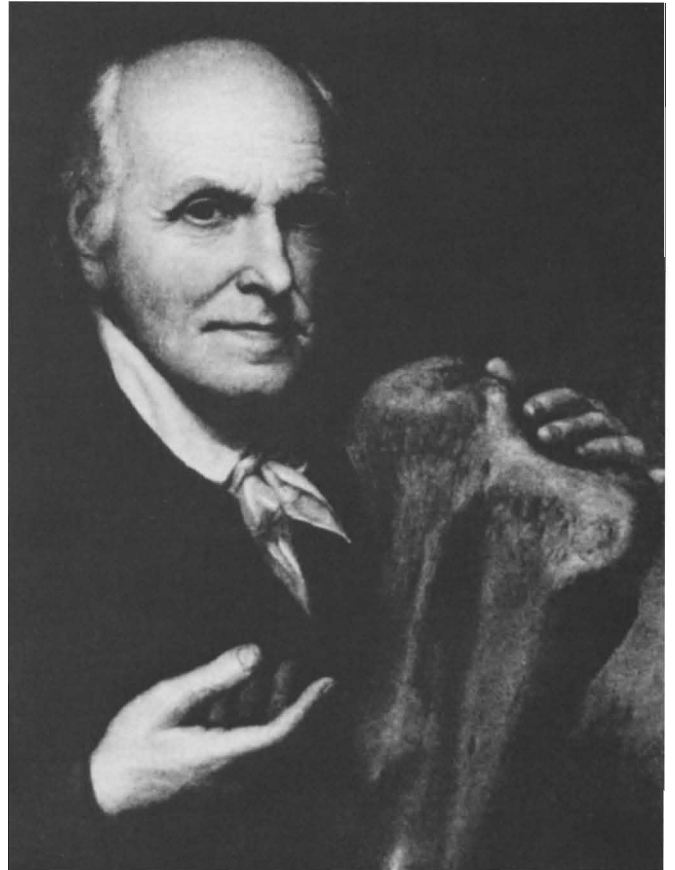


FIGURE 4. Self-portrait of Charles Willson Peale (1741–1827) gesturing to a mastodon bone. (Courtesy of The New-York Historical Society, New York City.)

the British talked of Gog and Magog, the Belgians of Antigonous, the French of Gayant, the Scandinavians of their Jöten, and the Germans their Hünen. Statues commemorating these colossi still stand in London, Antwerp, and Douai (Anonymous, 1910:926; Wright, 1962:29–30; see also Tylor, 1878: 322–325).

One of the earliest misidentities of what presumably was a fossil proboscidean tooth was by Saint Augustine (354–430 A.D.). In a discussion of antediluvian man in *City of God* he reported that “on the shore of Utica I myself, not alone but with several others, saw a human molar so enormous that if it were divided up into pieces to the dimensions of our teeth, it would, so it seemed to us, have made a hundred of them. But that molar, I should suppose, belonged to some giant” (Augustine, 1965:457–459).

Thirteen centuries later, in 1678, Athanasius Kircher, a prolific Jesuit writer, published an illustrated treatise on geology, *Mundus Subterraneus*. Kircher hypothesized that most

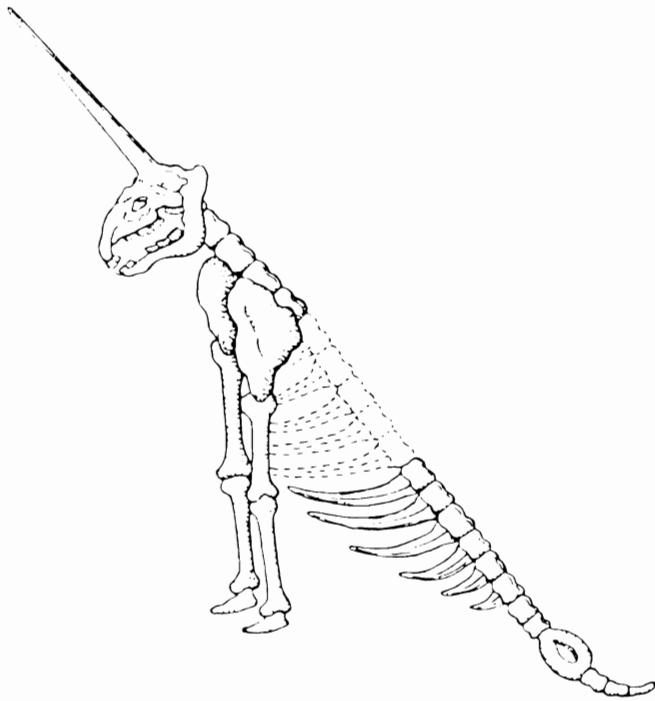


FIGURE 5. An early “reconstruction” of a fossil elephant skeleton as a “unicorn” by Otto von Güricke in 1663. [From Dunbar and Waage (1969) and reprinted with the permission of Karl M. Waage and John Wiley and Sons, Inc.]

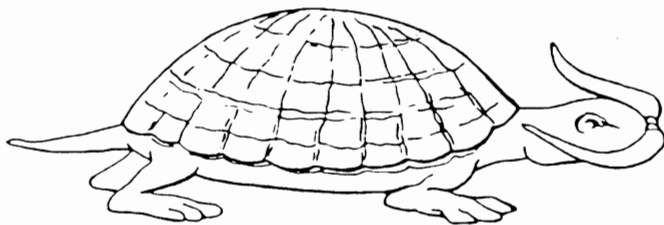


FIGURE 6. An 1840s “reconstruction” of a mastodon skeleton as a tortoise by James Pedder. [From Dunbar and Waage (1969) and reprinted with the permission of Karl M. Waage and John Wiley and Sons, Inc.]

fossils had been brought to being by a *spiritus architectonicus* or *spiritus plasticus* acting within the rocks. But the forms of leaves, mussels, fish, and bones he recognized as the remains of once-living organisms. Some of the larger mammal bones, presumably of mammoths and mastodons, he assumed to be from giant humans, an illustration of which he included within his tome (Adams, 1960:255–256).

Thomas Jefferson (1743–1826), statesman, architect, and dedicated patron of the sciences, maintained a keen interest in North American fossils. In fact, Jefferson himself made significant paleontological finds, and during his presidency set aside

a room in the Presidential Mansion as a museum to house his collection of fossils (Dunbar and Waage, 1969:54, 478). Jefferson was troubled by French scientist Georges-Louis Leclerc de Buffon’s contention that bones of large mammals unearthed in northern Russia and North America were the extinct ancestors of the more “degenerate” Asian and African elephants. Hearing that Ezra Stiles (1727–1795), then president of Yale College, had information regarding these fossils, Jefferson queried Stiles about the nature of these remains (letter dated 10 June 1784). Stiles’s lengthy reply (letter dated 21 June 1784) included excerpts from papers by Edward Taylor, Stiles’s grandfather. According to Taylor the following paragraph, dated 23 July 1705, was featured in a Boston newspaper:

One of the Gentlemen of the Council at York carried thither a monstrous Tooth that weighed four Pounds and three Quarters, said to be one of the great Teeth of a Man, whole and sound on the Top but much decayed in its Fangs; one of which being hollow contained half a pint of Liquor. It was dug out of a Bank or Hill that rose some 30 or 40 feet above the place, about 26 m. below Albany, at a place called Clavarrack. They found another Tooth that seemed to be a *foretooth* that was four fingers broad: and dug up Bones that when they came to the air turned to Dust; but one Bone they took up judged a *Thigh Bone* of a Man *Seventeen foot long*.

Stiles went on to describe traditions and stories of similar finds with which he was acquainted: a Norwegian legend that in 995 A.D., a number of giants were destroyed by the command of Olaus Triggo, and that four men slayed a 15-cubit giant in Norway in 1338; writings by Purchas to the effect that “at 2° So. Lat. on the West side of America there had been men so tall as to have as much from the Knee downward as an ordinary man in his whole body, and now are found in that Situation exceedingly great Bones of men and pieces of Teeth of fourteen ounces weight”; Joseph Acosta’s testimony that when he was in Mexico in 1586 “they found one of those Giants buried in one of our Farms, of who they brot a Tooth to be seen which without augmenting, was as big as the *Fist of a man*”; and reference to a “Giants [*sic*] Skeleton” dug up in Austria, “whose Head was as big as a middlesized Table, and one Tooth weighed five pounds and an half, the Bone of his Arm was as big as a mans [*sic*] middle.”

Like Jefferson, Stiles could not bring himself to believe that the giant fossil bones and teeth in question were from elephants. “I will hazard my Reputation with you, Sir,” he wrote to Jefferson, “and give it as my opinion that the huge fossil Bones, Teeth and parts of Skeletons dug up in Siberia, in Germany, France and other parts of Europe, and finally those on the Ohio and elsewhere in America, appertain, *not*

to *Quadrupeds, not to Sea-Animals, but to Bipeds of huge and immense Stature.*" Later in the same letter Stiles was more specific: "Perhaps the sensible rational and anatomical Virtuosi will judge those dug up at North-Holston, at Clavarack and elsewhere together with the most of those in Europe (of this enormous Description) and the Mammoths of Siberia all truly belong to an Animal Race in the shape of Men, called Giants in the *Scriptures, Ovid, and the Memoirs of Norway.*" [The correspondence between Jefferson and Stiles is printed in full in Anonymous (1951).]

CONFIRMING THE FAITH

Nephilim, the Hebrew noun in Genesis 6:4 used to designate a race of antediluvian people, is rendered "giants" by the traditional King James Version of the Bible. Because of uncertainty as to the precise meaning of this expression, updated English translations often transliterate the original Hebrew word rather than assign to it a questionable meaning (Davis and Gehman, 1944:202; Bush, 1976:711). But, dubiousity on the part of Old Testament translators was not shared by numerous biblical commentators. For centuries Christian apologists used Genesis 6:4 to certify the historical reality of antediluvian giants.

To biblicists the idea of pre-flood giants paired logically with the extraordinary life-spans of the patriarchs as recorded in the genealogies of Genesis 5 and 11. Man's present "degenerate" state, they believed, was the result of a gradual reduction of man's "vital forces" after his fall into sin. This assumption even received support from the classics. Roman naturalist Pliny the Elder (23–79 A.D.) wrote: "As also this is observed for an undoubted truth, that generally all men come short of the full stature in time past, and decrease still every day more than other: and seldom shall you see the son taller than his father; for the ardent heat of the elementarie fire (whereunto to the world enclineth already now toward the later end, as sometimes it stood much upon the waterie element) devoureth and consumeth that plentiful humor and moisture of natural seed, that engendreth all things" (Plinius Secundus, 1634:164–165). Eight centuries before Pliny, Homer (?) implied in *The Iliad* that Tydeus was of far greater strength than the poet's contemporaries (Lang et al., 1900: 91), and in *The Odyssey* he referred to "the Cyclopes and the wild tribes of the giants" (Butcher and Lang, 1893:109). These and other references were taken by later writers to mean that people were once of far superior stature (see, for example, Augustine, 1965:457–459).

So for hundreds of years giant traditions flowed strong and deep within the current of religious thought. Not surprisingly, the numerous finds of large bones and teeth were welcomed by Christians as confirmations of biblical truth.

Joseph Dudley, then governor of Massachusetts, was sent a mastodon tooth discovered in a peat bog south of Albany, New York, the same specimen referred to by Edward Taylor, Ezra Stiles's grandfather. Dudley wrote of the fossil to Cotton Mather (letter dated 10 July 1706):

I suppose all the surgeons in town have seen it, and I am perfectly of the opinion it was a human tooth. I measured it, and as it stood upright it was six inches high lacking one eighth, and round 13 inches, lacking one eighth, and its weight in the scale was 2 pounds and four ounces, Troy weight.

I am perfectly of the opinion that the tooth will agree only to a human body, for whom the flood only could prepare a funeral; and without doubt he waded as long as he could keep his head above the clouds, but must at length be confounded with all the other creatures and the new sediment after the flood gave him the depth we now find (Dunbar and Waage, 1969:60–61).

Adam Clarke, whose *Commentary on the Holy Scriptures* (eight volumes, 1810–1826) became a standard nineteenth century reference work, wrote that "he had known a young man who measured eight feet six inches in height. . . . If, therefore, at this day such a monster of a man is known to exist, how much more may we say, and with confidence too, that in those ages [before Noah's flood] when men lived longer on the earth there were exceptions to the general size of men of a more monstrous and astonishing description?" (Bourdeau, 1867).

The 1840 edition of Cruden's popular scriptural concordance suggested that "These giants of the old world, who once carried themselves insolently towards God and men, but were quickly subdued by the divine power, and drowned with the deluge, do now mourn or groan from under the waters where they were buried, or in their subterranean and infernal habitations. . . . It is very probable, that the first men were all of a strength and stature much superior to those of mankind at present, since they lived a much longer time; long life being commonly the effect of a strong and vigorous constitution" (Cruden, 1840:189).

American advent preacher J. N. Loughborough (1832–1924) told of his visit with a "Brother Bliss" who claimed to have found eighteen giant human skulls and other bones exposed by the up-turned roots of a blown-over tree in southern Illinois. Bliss estimated that one of the bones was from "a man at least eight feet tall." Yet another Loughborough informant reported that when he was a boy in Virginia, human bones, supposedly from a "man eight or nine feet in height," were dug up on his father's farm. Loughborough (1865) concluded

that such finds teach us “that the race has fallen off greatly in size.”

Soon after Loughborough’s article, an undated, eight-page tract compiled by his friend, Daniel T. Bourdeau (1835–1905), appeared attacking an idea, then popular, that mammoth human skeletons evidenced a “pre-Adamic age.” According to Bourdeau these remains testified rather to the existence of pre-flood giants “telling us that we are sadly fallen and degenerate.” The pamphlet included reports of purported fossils of giant men from many places and concluded by quoting in full J. N. Loughborough’s 1865 article (Bourdeau, [n.d.]).

Similar notions were championed by Calmut, a French Benedictine biblical scholar, who believed that mastodon bones exhibited by Mazurier were those of King Teutobocus, and that they testified to the existence of the antediluvian giants of scripture. Father Torrubia exhibited mammoth bones in Spain as the remains of pre-flood giants. Increase Mather sent similar bones to England along with the same interpretation. Jurieu saw such bones on display in a church he visited in Valence. Henrion, apparently after viewing one such display, calculated that Adam stood 123 feet 9 inches tall, whereas Eve reached 118 feet 9 inches plus (White, 1960:226–228)!

TWENTIETH-CENTURY MYTHS

Curiously, interest in ancient races of giant humans has not entirely dissipated. In 1969 I was given a photograph of what was claimed to be a distal femoral fragment from a giant human skeleton (Fig. 7). According to the woman providing the photo, the complete skeleton was discovered in an enormous stone sarcophagus in the mountains of South America. During a period of political unrest the skeleton, save for the pictured fragment, was allegedly lost or destroyed. Not surprisingly, the fragment corresponds in size and shape to that of a woolly mammoth (see, for example, Olsen, 1979: Fig. 25).

Richard M. Ritland (1970:229–230) told about a site in northwestern New Mexico he visited which, according to the local Indians, contained giant human bones:

“Bones” they were indeed! But the “bones” of trees! Some of the chunks of petrified wood identified as bones were about the size of one’s arm or leg while others were much larger, “giant bones.” Most had beautiful structural preservation of the growth rings. From the local Methodist missionaries I learned that such legends of giant ancestry are common among the Indians of that region, and apparently such imaginative associations are not at all rare.



FIGURE 7. Distal fragment of a femur said to be from a “giant human.” The size and shape are similar to that of a woolly mammoth.

Perhaps the best known twentieth-century “evidence” for giant humans emerged from the limestone beds of the Paluxy River near Glen Rose, Texas. This locality is famous for impressive and well preserved trackways of the Cretaceous saurischians, *Apatosaurus* and *Allosaurus*. Roland T. Bird, paleontologist with the American Museum of Natural History, was attracted to this site in the 1930s after seeing dinosaur and giant humanlike tracks (Fig. 8) from there at a Gallup, New Mexico, Indian trading post (Bird, 1939). Upon arrival at the site, Bird found numerous dinosaur tracks, though apparently no humanlike tracks. Possibly encouraged by the notoriety the region received by Bird’s visit, local entrepreneurs continued to sell humanlike tracks, as well as dinosaur tracks, from the Paluxy strata. Many creationists welcomed these tracks as hard evidence that dinosaurs and humans were contemporaneous (Moore and Slusher, 1970:417–418; Taylor, 1971). Subsequent investigation, however, showed that at least some of these tracks had been carved out of the limestone by local residents. Despite sensational claims to the contrary, no human track, giant or otherwise, has been authenticated from the Paluxy River strata (Ritland, 1970:231; Neufeld, 1975).



FIGURE 8. The supposed “giant human fossil footprints” that caught the attention of paleontologist Roland T. Bird at a New Mexico Indian trading post. [From Bird (1939) and reprinted with the permission of The American Museum of Natural History, New York.]

* * *

“Size has a fascination of its own” Julian Huxley once observed (Gould, 1974). Certainly this fascination has never been more apparent than during man’s attempts to discover his own physical past.

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